

Mr. Bobby Bruckner's
Oral History
Kennedy Space Center
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Interviewers:

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1 Lee Snaples: All right, we are here at the KSC Headquarters, at Kennedy Space
2 Center and it is June 12, 2001. Would you give us your full name?

3

4 Bobby Bruckner: OK. My name is Bobby Gene Bruckner.

5

6 Snaples: And we would like to start off with just some of the basic background.

7 Where were you born?

8

9 Bruckner: OK.

10

11 Snaples: What your childhood was like. Where you went to school; that kind of
12 stuff.

13

14 Bruckner: All right. I was born in 1944, April 16, in Drew, Mississippi.

15

16 Henry Dethloff: Where is that? I'm from Louisiana originally.

17

18 Bruckner: Drew is in the northwest quadrant. [It's] a farming area.

19

20 Dethloff: Mississippi State?

21

1 Bruckner: No. [I attended] Delta State University [in] Cleveland. There's a farming
2 community there, and it's called the Delta Region of Mississippi and famous over the
3 years for cotton.

4

5 Snaples: And Blues.

6

7 Bruckner: A lot of the Blues originated in the Delta area, sure did. Actually I was
8 born at home. We have a farm. My Mom still has the farm there, and I was born at
9 home. The last of six, I have five siblings. My older sister remembers that; they were
10 told to go to church and then after church they were told to go visit the neighbor and when
11 they got home they had a little brother. {laughter}

12

13 Dethloff: Well that's quite a story, isn't it?

14

15 Bruckner: I was born there on the farm, and I grew up there, [and] I went to school in
16 Drew, which is a very small town there. I guess the most famous person from Drew is
17 Archie Manning who played quarterback for the New Orleans' Saints. He was in our
18 high school there and I remember Archie well. Drew was a consolidated school so [I]
19 went there for 12 years. So that's the way it happened. I always wanted to be a doctor.
20 That was my ambition. That was very difficult for the resources we had and the [lack of]
21 support. I was a good student, and I got a scholarship to a private school in Jackson;
22 Millsaps, it's a Methodist School, very fine school. After a year there I decided—you
23 know all of these technical classes I was really easy making A's [but] in Chemistry and

1 some of the other stuff I wasn't doing too well. For several reasons, one being financial
2 support, I decided to move back with my parents and go to Delta State so I could
3 commute. So I went over to Delta State and I changed my major to Mathematics and
4 Physics. I wanted to be a (double E) EE. They didn't offer that degree at the time at
5 Delta State. So I tried to mirror as much as I could the course work, and after I got
6 down here I did complete that. I went down to FIT and completed the Masters of
7 Science in (double E) EE. So I was very proud to be able to get the (double E) EE
8 Degree. We grew up as a very close-knit family of 6 children, and my mom and dad
9 and [the children] worked our farm, and that's the way we made our living.

10
11 Lisa Malone: What kind of stuff did you grow on the farm?

12
13 Bruckner: When I grew up we mainly grew cotton. That's some of the hardest work
14 in the world. My father was very clever to keep us busy. We never knew when we were
15 finished. He kept moving us around. We worked all summer and then school would
16 start in September. Well, you're not done. You're normally done with a crop about mid-
17 October. It didn't affect me as much as my brothers and sisters but I do have a couple
18 of report cards where the first 6 weeks are blank. So we did not go to school the first 6
19 weeks.

20
21 Dethloff: That's tradition. That's OK.

1 Bruckner: We had to catch-up. They didn't fail us, but it was incumbent on us to
2 catch-up. So [I] did that a couple of times and made it through that. But that's what we
3 did—we worked the farm. I'll tell you a little story. [It] was right at that time [when]
4 some of the farming became mechanized. You know farming was hard work and, to
5 this day, we really think we worked too hard. But I remember when the first mechanical
6 cotton pickers showed up. We had a neighbor [who] bought one, and what he would do
7 to pay for it, once he picked his crop, he would pick your crop for so much a bale. So
8 my father finally decided to do that because we also rented some land and we had a
9 little more than we could handle. He let this thing (mechanical cotton picker) in his field.
10 The first ones didn't do too good a job. It sort of scattered the cotton along the stalk,
11 [but] it got most of it. So I remember my brother and I (were) standing there and he
12 turned to me, he said, "Boy this is the best invention." He said, "Our hard work is over."
13 I was too young to get the significance, but he did. He was (older). He knew exactly
14 what was going on. So we were there watching this mechanical marvel and about 10
15 minutes later my father came up and said, "You know that sure leaves a lot of cotton.
16 Get your sack and get in behind it."

17

18 {laughter}

19

20 Dethloff: That ended that.

21

22 Bruckner: That took care of that.

23

1 Bruckner: Like I said, he was a clever man. But we made it and we had a lot of fun
2 growing up. We worked hard. We're still a close-knit family. My father passed away at
3 the age of 72. And I have one sister that's deceased.

4

5 Dethloff: Your family still in. . .

6

7 Bruckner: My mother is still there. My mom is 87. Still lives alone on the farm. Still
8 drives.

9

10 Dethloff: Great.

11

12 Bruckner: And not in great health, but she's still there.

13

14 Snaples: So leaving Delta State, how did you end up here?

15

16 Bruckner: Well, Delta State was a small college. What was its claim to fame? I
17 forget. After the war, you'll have to research this if you want to. But I think that's where
18 one of the aid packages to Europe was announced at that college. But it was [set up
19 as] a teacher's college and I sort of broke the mold there. I [knew] the Space Program
20 was starting and I certainly remember well John Glenn's flight. [In our high school] we
21 had just gotten an audio system. You know where you could make announcements,
22 and they put that on there. That really intrigued me. There [were] a lot of opportunities
23 in the technical fields when I was ready to graduate college. The college didn't know

1 how to handle it because they didn't have the resources to go find or to give you
2 guidance counseling and that kind of thing, so I did that on my own. I interviewed with
3 several companies. I had really a good offer from Bell Labs, which I probably should
4 have taken in retrospect. But it was in New Jersey. So they flew me up to New Jersey,
5 and it was a great working environment. And then an offer from NASA came through,
6 and it was in Florida.

7

8 Dethloff: Who did you contact?

9

10 Bruckner: For NASA I just contacted the Civil Service Board.

11

12 Dethloff: OK.

13

14 Bruckner: And did not have to take the exam. I just filled out the 172. Is that the old
15 green form?

16

17 Malone: 171.

18

19 Bruckner: 171. Yeah. Filled out the 171 and sent it to Huntsville. That was the
20 Southern Region and I kept getting non-selected offers from Huntsville. Our physics
21 class went over [and visited Huntsville] and I liked [what they did], [but] I had an offer
22 from Kennedy and I was just really excited about that. And about 3 months after I was
23 here Huntsville made me an offer and tried to get me to move.

1 {laughter}

2

3 Dethloff: Is that right? I'll be.

4

5 Bruckner: So I'm glad I didn't do that. But that's the way I wound up here.

6

7 Dethloff: So that was in what year?

8

9 Bruckner: That was in 1966. So that's the way I wound up at KSC. Showed up a
10 week late. I don't even remember exactly how that happened. I didn't make it [the]
11 Monday morning I was supposed to arrive. I was hired over in Instrumentation in the
12 CIF Building, and Karl Sendler, who passed a couple of months ago, was our Director,
13 one of the original Peenemünde scientists. He was Austrian, very sort of gruff kind of
14 fellow, and he had his own Personnel Department pretty much. It turns out the lady that
15 ran Personnel was from Clarksdale, Mississippi, which [was] right up the road. So she
16 called. Well I was off fishing {laughter from all} and my mom had a panic because here
17 I am my first job and I'm already late. {laughter} Somehow we got the date mixed up
18 because I came in the middle of the pay period. I came to Florida. I put all of my stuff
19 in my car and moved to Florida.

20

21 Dethloff: Oh, so you jumped in the car and left?

22

1 Bruckner: No. I negotiated the next Monday. So they gave me a couple of days
2 reprieve to get here and get setup. So I came to Florida. My first trip to Florida, and
3 when I reached the Indian River I just thought I was looking at a paradise it was so
4 pretty. I wanted to live on the beach so that's what I did. I got an apartment over there
5 and came to work. That's how I got here.

6
7 Snaples: How did you find NASA when you got here? I mean in terms of what were
8 your first impressions, how did it, I mean they're in the midst of the Apollo Program.

9
10 Bruckner: Well, yeah, I was right at the end of Gemini. We had maybe two Gemini
11 flights left. And you know the whole program was at Kennedy at the time, Mission
12 Control was here, the whole thing. Apollo was building up and of course the control part
13 was moving to Houston. We were working [Apollo] we didn't really support Gemini. I
14 don't remember. Maybe we did [with] a little bit of instrumentation. I think we did have
15 some [Gemini] folks in the directorate. But the group I was in was building checkout
16 equipment for Apollo, and I was very lucky. I got in a group with some very sharp
17 engineers. My first supervisor's name was John McDonough. He's still around. He still
18 lives in Cocoa Beach and we still communicate occasionally. That first group I was in
19 was very close-knit and occasionally we still get together. Some of them are no longer
20 with us, but most of us are still around and kicking. So they welcomed me in. They
21 were a sharp group and I felt very inadequate, I believe would be the word I would use,
22 because I was not very astute in the ways of the world, and business, and jobs, and I
23 was pretty well frightened.

1 Dethloff: Um-huh, sure.

2

3 Bruckner: And there were a lot of sharp guys there and I really did feel inadequate,
4 but somehow managed to mix in.

5

6 Dethloff: So you're really on the ground floor of Apollo?

7

8 Bruckner: Absolutely. We were getting ready [and] we went to the moon 3 years
9 later. I mean that was the ground floor. It was amazing what we did in 3 years. I do
10 remember where I went to school we didn't have that good [test] equipment—when you
11 [went] to the lab to get an oscilloscope you normally got one [built] from a Heath Kit. I
12 don't know if you remember Heath Kits? You build your own. When I got to Kennedy
13 my boss carried me in this room and there were boxes of these Tektronix oscilloscopes.
14 He said, "Pick out one." I just thought [this was] the best thing that ever happened; you
15 know good test equipment and a good learning environment. And they did take me
16 under their wing and I learned an awful lot from them, which I appreciate to this day.
17

18 Malone: Did you ever see Dr. Debus or von Braun in those days?

19

20 Bruckner: Yeah. When did I see them? They would come around occasionally. In
21 the CIF we were more of an off-line trouble shooting area. If there [were] problems that
22 they had to run to ground, they would replay the tapes through the ground station and
23 look at the data. I remember a couple of times they would come in and maybe look at

1 data and get briefed on it. I remember LBJ coming to the Center. I don't think Kennedy
2 came to the Center when I was there. Matter of fact he wasn't around, was he?

3

4 Dethloff: No.

5

6 Bruckner: LBJ was President and he did visit us. Dr. Von Braun would come visit
7 Karl Sendler. They were still fairly close. And yeah, you would see Dr. Debus around.
8 Dr. Debus was a hands-on manager. You would see him around a lot.

9

10 Snaples: Anything in particular you remember having to deal with on the Apollo
11 mission?

12

13 Bruckner: I think my most vivid memory [of] Apollo, other than the moon landing,
14 [was] the fire, 204.

15

16 Snaples: 201 or AS204.

17

18 Bruckner: I remember [from the] Pad, we were there looking at data, and everything
19 was going well. It was just about news time, if I recall. It turns out we had, at that time,
20 the only place in the building where we had commercial TV that we would feed to
21 various people that needed it. So we would monitor that so we saw it. Actually we
22 heard it on the OIS and then of course that went down and then we watched the news.
23 They jumped all over it. So I remember that well. That was a very heart-wrenching day.

1 The moon landing of course is the highlight of my career. I mean Shuttle is great, it's a
2 wonderful machine; certainly doing its job. I enjoyed the 10-12 years that I spent in [the
3 Shuttle] program and did a lot of great things. But the moon landing, you just can't top
4 it. You can't top the Saturn V, that program, the way it was done and culminating with
5 the landing on the moon. And then of course things started going downhill. {laughter} I
6 do remember Apollo 13 well. One of my memories there is our group did send our data
7 to the Firing Room. The Firing Room was turned around the other way for Apollo, the
8 people faced . . .

9
10 Malone: The back of the room.

11
12 Bruckner: . . . the back, yeah. And if you look above, there are some big panels
13 there that I think have been either painted over or whatever, but those were display
14 screens and that's where our data was displayed on the big panel so everybody could
15 see it. After Apollo 13 they decided [that] maybe we were not monitoring the redline
16 measurements close enough or [should] have some visual indication that something
17 was redlined when we were doing the checkout. So our job was to flag those
18 measurements, and one of my jobs was to figure out how to make that known to people
19 that were watching [the data].. They also had some monitors in their consoles that
20 could [display] the data. We didn't have color [displays, they were] all black and white.
21 So we [tried] various things, you know, to put a little blink on it or blink the whole line or
22 whatever. And the other thing was really funny; we were going to put an audible alarm
23 [at the consoles]. So we made all these little audible alarms. They were called Son-

1 Alerts in those days, which [were] really aggravating. I was checking that out and these
2 things are going off all over the Firing Room. That lasted [for] one test. So we turned
3 those off. But anyway, I'll get to the point, I think it may have been the first time they did
4 the Silver Snoopy. I earned the Silver Snoopy for that. And I found it the other day, and
5 [saw that] John Young signed my Silver Snoopy Award. So that means a lot to me as I
6 look through some of the memoirs as I was unpacking some of the stuff that I've
7 collected over the years.

8
9 Dethloff: And it's nice.

10
11 Bruckner: So those would be the things in the Apollo Program.

12
13 Snaples: And then you moved into working with the recording playback stuff?

14
15 Bruckner: Right. You know after [the last Apollo flight] the funding dried up and it
16 was bad around here. One reason I stayed with NASA was job security, and in those
17 days I was glad I did. You could come down SR3 and you'd be the only car on the
18 road. You know, 2 or 3 coming to work. It was just us NASA folks basically. So we
19 were looking for something to do. I mean they didn't lay us off. The only RIF I
20 remember; there were rumors of it, but I think Huntsville had some people [who] actually
21 were reduced in force. [NASA] had a few, I would say "token" RIFs here. Our group
22 had a sort of generic [checkout] system, and we went over and offered our services to
23 the unmanned program. They were trying to do Viking and some of the other, I think

1 Explorer Missions maybe, I don't remember that exactly. I do remember we supported
2 Viking.

3

4 Snaples: That's your area Henry.

5

6 Bruckner: OK. So we offered our services there. They didn't have a real-time
7 checkout so we used the CIF and those systems that we had used on Apollo and we
8 supported those programs. So I got introduced to the unmanned area, and it's funny,
9 that's the way I ended my career as you know.

10

11 Snaples: Yeah. Yes.

12

13 Bruckner: But I made a lot of friends over there and it served me well over the years.
14 So I got introduced to that and spent some time in those blockhouses [during the]
15 various programs. Viking was a very exciting program. So we were [supporting them]
16 and then we were working toward Shuttle. We didn't know if Shuttle was going to
17 launch here, if you recall. And [when that] decision was finally made we proceeded to
18 build a checkout system for Shuttle, which is LPS. They formed a group under Frank
19 Byrne, who passed away this year. George Matthews [also] passed away this year;
20 some of my mentors. We were in the throes of building [LPS].

21

22 Dethloff: When did you start to transfer to Shuttle activity? Do you remember?

23

1 Bruckner: That would be, well I tell you my timeline. They still had the pavilions in
2 there for the Bicentennial so that would be 1976 or so, right?

3

4 Dethloff: OK.

5

6 Bruckner: So about 10 years on Apollo and then [for] 10-12 years, I worked Shuttle.
7 We were all told to report to the LCC and start working on that. My group was a close-
8 knit group, but we were also pretty well . . .

9

10 Dethloff: Very versatile.

11

12 Bruckner: We were versatile, but we were, what is the word I would look for, I think
13 pretty inflexible. We sort of did what we wanted to do because we were good. They
14 decided they had had enough of that so they split us asunder. Some of us went to . . .

15

16 Dethloff: You were too independent.

17

18 Bruckner: There you go. That was the word I was looking for. Some of us went to
19 the Firing Room [and worked] the CCMS. [LPS] had 3 components. I was tabbed to go
20 to the RPS. The RPS was an afterthought. They thought they could checkout
21 everything just using computer data. And a ground station was . . .

22

23 Dethloff: RPS? Excuse me can you . . .

1 Bruckner: Record and Playback Subsystem.

2

3 Dethloff: Thank you. All right.

4

5 Bruckner: no longer needed. It's funny, in Apollo every stage contractor had
6 their own ground station. You didn't have a common ground station in those days.
7 Except in the CIF. We had some. So we took that equipment and moved it and set it
8 up to support Shuttle. So here you go. That equipment supported Apollo, unmanned,
9 and now Shuttle. So we hauled it out there and got it working and it was mainly for
10 [offline testing]. What we found out, and they're struggling with it to this day, [was] that
11 LPS is a very labor intensive [system]. It takes a lot of people to bring that system up,
12 run it, you know check it out, get it ready, load it. Well maybe you're just trouble-
13 shooting a transducer on the Shuttle. You don't need all of that. So RPS was put in
14 mainly for off-line trouble shooting or any thing that you have to work through after flight;
15 any kind of anomaly on the Shuttle where you don't have to have a full-blown up test.
16 That's what RPS [was] supposed to do. You just needed a small number of people and
17 you go in and you trouble-shoot.

18

19 Dethloff: And that's pre-launch and that's during flight?

20

21 Bruckner: The main thing. I don't think we did much during flight. It was mainly pre-
22 launch and launch. One of the things that they decided they needed to do, and I don't
23 know if this rule still holds, is anytime you were testing or anytime you were launching,

1 you wanted to record the data, what they call raw data, which is recorded on an analog
2 recorder. That way, it's not processed, so if any kind of anomaly is there you could
3 essentially replay the whole test. So we made reams and reams of tapes, just pallets of
4 tapes. I dare say there are still tapes on this Center from Apollo.

5

6 Lisa Malone: I was wondering if you all saved them all?

7

8 Bruckner: I don't think that anybody ever had the guts to have a tape retention
9 policy. {laughter} So that's hard to do. You know you never know how far you want to
10 go back. But anyway, that's one of the things that RPS did for pre-launch and the
11 testing and for launch. I don't remember; the only thing that we would do for flight [was]
12 if they had an anomaly and they had a tape maybe at JSC or one of the down-range
13 areas they would bring it in and play it.

14

15 Dethloff: Ask you to check it?

16

17 Bruckner: Yeah. Play it through. But my job really in RPS was to go redesign it and
18 modernize it. So I was sort of the chief engineer on the project and we did that in
19 stages. So. . .

20

21 Dethloff: And really you had worked with that equipment from the very beginning?

22

1 Bruckner: Oh yeah, I knew the equipment. So we did that and. . .let's see, about
2 1984 or so I guess I got, I don't want this to sound the wrong way, but Shuttle's very
3 repetitive, and I got bored.

4
5 {laughter}

6
7 Bruckner: I know that sounds crazy, but it was just [the same things] over and over
8 and wasn't much of a challenge, so I went around looking for other challenges.

9
10 Snaples: Is that when you went to payloads?

11
12 Bruckner: Yeah, and you know, payloads intrigued me because it was different and
13 we were just then getting through the developmental flights, everything was going
14 swimmingly well, and payloads did intrigue me. So I had an opportunity to come over to
15 payloads. And I decided to do that.

16
17 Dethloff: In payloads are you working more intensely now with other Centers, other
18 Agencies, and so forth I guess?

19
20 Snaples: Contractors?

21
22 Bruckner: Yeah. I had led a sheltered life to tell you the truth.

23

1 {laughter}

2

3 Dethloff: And that really opened the door, huh?

4

5 Bruckner: Oh yeah. So that was probably the best move I ever made in my career
6 because up to that point I was GS-13, when I moved into payloads, and very content. I
7 mean I was an engineer, very lucky in my career to be able to have a lot of hands-on
8 kind of engineering in the groups I was with, so I relish that and you know had 20 years
9 of that.

10

11 Dethloff: Discuss if you will, and a little more intensely, your payload
12 responsibilities, that changing world that you entered, and you went into that.

13

14 Bruckner: Well, we'll talk about payloads.

15

16 Dethloff: OK.

17

18 Bruckner: The way I got to payloads is like I said, I was a little bored so I went out
19 looking for a different job. They were struggling and I sort of knew that. Payloads [was]
20 the last of the groups [that] went to mission contractors [where] a lot of the work was
21 contracted out. I guess the base ops was first and then we went through that in Shuttle
22 and that's one reason, honestly, that I sort of got to looking around, because a lot of the
23 work I'd done was mature. And we started turning that over and backing out of that.

1 Payloads was the last one, so it was still pretty much a NASA kind of thing. I knew they
2 were struggling and they had just gotten a new contractor in communications. They
3 couldn't seem to get the comm circuits to work . . . or check out. . . so they would show
4 up for a test and the world sits around and waits to be able to communicate. So they
5 had a real problem with that. And I was asked to come over and take a look at that and
6 see if I couldn't help because they knew I was interested in another challenge.

7

8 Dethloff: Who was that contractor?

9

10 Bruckner: It was McDonnell-Douglas. . .

11

12 Dethloff: OK.

13

14 Bruckner: . . . that won that contract.

15

16 Dethloff: OK.

17

18 Bruckner: Now that was not PGOC, we . . . let me remember. . . yeah . . . we had a
19 McDonnell-Douglas contractor, payloads did, but it was not the mission contract. It was
20 a different division. And then, when I was there, JoAnn Morgan was the source board
21 chairman [for the PGOC but] I don't remember the dates. You can look them up or
22 JoAnn would remember. That source board probably was just starting, or maybe had
23 already started. McDonnell-Douglas was the [existing] contractor and they

1 subsequently won the payload ground operations contract [PGOC], so [we hired] the
2 same people.

3
4 Dethloff: OK.

5
6 Bruckner: But they just did not have a communications department. Very confusing
7 is the way I would say it because the division responsibilities [in communications]
8 between the mission [contractors] was not real clear; I don't even know if it is today, but
9 anyway that's just the way it was, because Comm went across the Center. It was more
10 of a common kind of system so my job was to try to make that work so that they didn't
11 have to wait around for a shift to be able to run their test. Honestly, I came over and
12 took one look at that . . . we were busy . . . I mean we had launches like . . . we were
13 trying to do seven or eight a year and there were payloads all over the place and
14 customers screaming at [me] and trying to get their payloads in and checked out and
15 get their Comm circuits working, and I got thrown in into that. After about a week I went
16 to the boss and said, "I'm not interested in this. This just can't be fixed. I can't do it."
17 And it was funny because [I had heard a rumor that] my director at Shuttle, [John
18 Conway], was going to get transferred to Payloads. And he and I are pretty good
19 friends, had known each other a long time, and he found out that I was ready to give
20 this up. I talked to Frank Byrne, who was John's deputy, and I had decided I was going
21 to go back. I was going to put my tail between my legs and go back to Shuttle where it
22 was comfortable. . .

1 Dethloff: Take me back. . . {laughter}

2

3 Bruckner: . . . And see if they'd take me back. And I went in to tell John this. I

4 walked in his office, and he said, "I'm glad you came by. I just talked to Bev Merrilees.

5 You need to go talk to her. We got your papers already transferred so you're all set." So

6 I didn't even bother to tell him why I came to see him. . .

7

8 {laughter}

9

10 Bruckner: I just said well OK.

11

12 Dethloff: OK. So you're in payloads?

13

14 Bruckner: I'm in payloads. And, I worked on that and I won't go into the details, but I

15 really made a good reputation there with the various people . . . I fixed [the Comm]

16 problem.

17

18 Snaples: Do you have any recollection of any payloads you thought were

19 particularly interesting or particularly significant?

20

21 Bruckner: In the early days?

22

23 Snaples: Um-huh {yes}

1 Bruckner: Ummmmmm

2

3 Snaples: Were you here for Hubble?

4

5 Bruckner: Oh yeah. We were here for Hubble and the Goddard crowd. That was

6 certainly a biggie. And it had all the sensitive optics on [it], and we were down at the

7 VPF, the Vertical Payload Facility, with all the Goddard folks and Frank Cepollina and

8 all that crowd.

9

10 Snaples: How did you get along with the . . . I mean how does Kennedy Space

11 Center . . . how do those things work? Is there a lot of fighting over territoriality? Is

12 there a lot of cooperation?

13

14 Bruckner: You have to do a lot of planning.

15

16 Snaples: OK.

17

18 Bruckner: And that's another area I got into after I got through the Comm thing and I

19 have to credit JoAnn Morgan [for] some of this. JoAnn was there trying to get what we

20 would call the customer base, the people that bring payloads here, you know, for all that

21 [processing] to be successful. So it took a lot of planning. She had pretty much [all] the

22 planning group. And it turns out one of their problems, one of the problems in Comm,

23 was we didn't do proper planning. So when they got here everybody was surprised. So

1 I got into that part, you know, to try to attack this problem on the front end and that's
2 where I got introduced to a lot of the customers, mainly JPL and Goddard. In those
3 days we were also flying some commercial missions with RCA and ComSat, I think.
4 Boy they were tough. Some of them were bringing payloads out to Astrotech and they
5 had this little, what I call an FM radio, but they thought they had an S-Band system and
6 they were shooting a signal across to Hanger AE. I took a lot of abuse from that
7 community.

8
9 Malone: Do you remember when Astrotech first came on board?

10
11 Bruckner: Um huh (yes). [I was} trying to get [their Comm] to work.

12
13 Malone: And what were you all told about how to make that work? I mean that was
14 separate wasn't it? Commercial?

15
16 Bruckner: Well, it was separate. Well, it's an interesting story. I believe the original
17 Space Act Agreement. . . if you interpret it, sort of gave NASA instructions to make this
18 successful. Now how far do you interpret that? Well Astrotech interpreted that very
19 liberally, for good reasons, and I don't fault them for that. So we were walking a thin line
20 I think at times in trying to get that to work. We had to remind them at times that the
21 Space Act Agreement was for everybody, not just Astrotech, and if they could find the
22 support in the local community they were supposed to go get it, so we did enforce that.
23 I think Bill Fletcher wrote the first agreement we had with Astrotech. And what's funny

1 about that, they didn't know how much to charge. And it turns out we took a sort of a
2 figure [based on what it cost the process in a KSC facility so] it had some merit. It was
3 about a million dollars, so Fletcher said about a million dollars. So guess what they
4 charged?

5

6 Dethloff: A million bucks.

7

8 Bruckner: A million bucks.

9

10 {laughter}

11

12 Bruckner: So we did help them a lot get on line. I think that we did the right thing
13 and tried to develop that.

14

15 Malone: Now did the NASA people think that that was competition or that their jobs
16 were going to be given away? How did you all deal with that?

17

18 Bruckner: I don't think that was a big issue Lisa. We were so busy and our barns
19 were full and we didn't really look at that as competition. Some of the customers liked it
20 better there, some liked it better on Center and I think it's that way to this day. I know
21 that the GOES program stills likes to go to Astrotech. And they still process out there.
22 [We assigned] somebody to them, a NASA person, to shepherd them through all this
23 process. So I really enjoyed that customer contact and got pretty good at it.

1 Malone: What about . . .

2

3 Bruckner: And developed a lot of friends that I have to this day at Goddard and JPL,
4 a lot of good friends.

5

6 Malone: What about your international customers? Weren't they just coming in?

7

8 Dethloff: A good question.

9

10 Bruckner: Well, Spacelab. You've got a lot of that international flavor with Spacelab,
11 and most of the Europeans. So we had a group of NASA people there that supported
12 them. [I] made a lot of contacts in the Spacelab program [that I still have.]. That was a
13 great program. I did have, I guess, the dubious duty to close that program out at KSC.
14 So we did that. We sent one module over to Europe. You know they built the original
15 equipment and a lot of that equipment was European design. The other [module] is at
16 the Smithsonian at Dulles.

17

18 Dethloff: Was the European Space Agency around at that time?

19

20 Bruckner: ESA?

21

22 Dethloff: Yeah.

23 Bruckner: Yeah.

1 Dethloff: That was their primary. . . was that their primary. . . ?

2

3 Bruckner: Oh yeah.

4

5 Dethloff: That's what I thought.

6

7 Bruckner: Now there were some other international payloads. I remember one well,
8 SOHO, which is still there. It's out at [a] libration point, studying the sun. That was a
9 multi-national European program, and Goddard was the sponsoring center [for] NASA.
10 I think the deal [was], and it's still this way, that any kind of joint program like that [is
11 that] no money actually changes hands. You have an agreement there. So it was a lot
12 of European countries. What made that interesting, it must have been ten or twelve
13 European countries. And they showed up in force, and that was something to watch
14 with the French and the Italians and the Belgians and the Germans and the Dutch. . .

15

16 Dethloff: What year was that roughly?

17

18 Bruckner: When was SOHO? . . . I'm gonna guess. . .

19

20 Malone: Well the space craft probably arrived sometime in the eighties, the late
21 eighties. . .

22 Bruckner: It was late eighties. . .

23

1 Dethloff: Eighty-seven or eight?

2

3 Malone: Or early nineties. We can look it up.

4

5 Bruckner: You can look that one up. But that's been a really successful [mission]. It
6 was a very large payload. And took 'em a while to check that out. Made a lot of friends
7 on that that I have to this day in Europe. And like I said, that was something to behold, I
8 remember they always liked, especially the French, to toast their successes. And I
9 always was talking to security, "They smuggled another bottle of wine in."

10

11 {laughter}

12

13 Bruckner: They said, "We'll monitor it". So we got through that and didn't make them
14 mad. But that was a good program.

15

16 Dethloff: Did you sense from that point on an increasing international involvement
17 in almost everything you did?

18

19 Bruckner: Pretty much. [SOHO] would stand out in the late eighties or nineties as
20 one of the payloads I certainly remember. I got a nice plaque from the ESA, [from] the
21 Dan Goldin equivalent, whose name was Luton. I [also] got to know [their chief
22 scientist] fairly well because he was in residence here for some time. And he just
23 retired this year, if I recall. So I made a lot of contacts and that's one that stands out.

1 Malone: Did you get to travel overseas?

2

3 Bruckner: Dr. Bonnet was the chief scientist of ESA. Very likable fellow. I remember
4 they had a scientist on that program and his name was [also Bruckner] but he spelled it
5 “B-R-E-U-C-K-N-E-R” and the plaque they sent me, that’s the way they spelled,

6

7 Dethloff: You’re Bruckner.

8

9 Bruckner: They gave me the European. . .

10

11 Dethloff: You’re Bruckner.

12

13 Bruckner: Yeah. . . yeah. . . The Germans always loved me because,

14

15 Dethloff: They thought you were one of them.

16

17 Bruckner: They thought I was one of them.

18

19 {laughter}

20

21 Snaples: That’s all it takes.

22

23 Bruckner: They just knew.

1 {laughter}

2

3 Snaples: And then you went to ELV, correct?

4

5 Bruckner: Well, I was a second line director just as, I guess, we were starting to do
6 Space Station.

7

8 Malone: But, before you go into that you were running payloads during Challenger.

9

10 Bruckner: I was in Comm at the time during Challenger.

11

12 Malone: OK, and we had a stand down. I know that Galileo and Ulysses were
13 going to fly on Shuttle. . .

14

15 Bruckner: Those are biggies.

16

17 Malone: But the liquid fueled. . .

18

19 Bruckner: The plutonium.

20

21 Malone: Mm huh, upper stage, and then they pulled it out.

22

1 Bruckner: Yep. They pulled [other missions that had plutonium] out so we had to do
2 those on a Titan IV. And that was a challenge, working with the Air Force. The other
3 ones of course. . . .ah. . . we. . . let's talk about the Mars missions, if you don't mind.

4
5 Dethloff: Good.

6
7 Bruckner: One that stands out there is Pathfinder. I made a lot of good contacts at
8 JPL and Tony Spear was a good friend [as was] Curt Cleven, their spacecraft manager.
9 Cassini was another one [that] stands out with Tom Gavin, another good friend. Got to
10 know Wes Huntress fairly well those days, who was the (Associate Administrator) AA,
11 and Glen Cunningham all great people. Cassini was a real challenge because of the
12 plutonium, but back to Pathfinder. Fond memories there, and I hope JPL will forgive me
13 since we are taping this. They showed up, they did a great job on Pathfinder testing
14 and I think that that's a reason that worked so well. They had tested everything that
15 they were going to do, but the problem was they got, I think, probably got a little behind.
16 When payloads came to the Center some of them were pretty well checked out, some
17 were maybe halfway there. Pathfinder came in pieces. And when they unpacked they
18 were in SAFE 2. I went down there and looked through the observation window and
19 this thing was all over. I came back to my boss, who was John Conway at the time, and
20 I said, "John, they aren't going to make it." And he said "Well, go down there see what
21 you can do to help them." So I went and talked to Tony, [who had] a pretty big ego, [I]
22 went down to his office. I said "Tony, ". . .

1 Dethloff: This is Tony who?

2

3 Bruckner: Tony Spear.

4

5 Dethloff: OK

6

7 Bruckner: He was the project manager. And I said "Tony, you know, I'm here to help"
8 and, you know, I would go in their trailer and look at their planning schedule and what
9 they were going to do. I had done a lot of payloads; they all have to come here. This is
10 the end of the line and I had seen a lot of them. [I] knew a lot of the problems they
11 [would run] into and I said "We would like to help . . . what can we do because I'm not
12 sure you are going to make it." Well, that really offended him. And so I said, "We'll do
13 anything". But to make a long story short, they did make it and it worked, and we did
14 help a lot with them. They sort of took me under their wing after that, because they
15 knew I meant what I said, and they gave me a wonderful plaque when that was all over
16 and thanked me for my straight shooting. When they got that spacecraft ready, Curt
17 Cleven, who was the spacecraft manager, called me. He said, "I want you to come take
18 one last look." And so he allowed me to dress out and I slid underneath. They had it on
19 a stand right before they encapsulated it, and I looked up under there with all of those
20 bags and all of this stuff and this shield packed in there and I'm thinking, "Oh God".
21 {laughter}

22

1 Bruckner: The fuel tanks on that stage was sort of around a ring [rather than] one big
2 tank. It was several tanks [and] they fueled it, down in SAFE 2. And I remember [I had
3 a] guy down there [who] was watching after them. He looked at it, he said “Well are you
4 going to spin balance that [after fueling]?” and they said “We don’t think so.” You know
5 we’ve tested all this, and he said, “Well how do you know you’ve got the same amount
6 of fuel [distributed] around?” So anyway they did decide to spin [the spacecraft]. So we
7 contributed in a lot of areas with our experience and made a lot of good friends on that.
8 That certainly stands out as one of the programs.

9

10 Dethloff: Could you. . .

11

12 Bruckner: And they invited me to JPL for landing and I didn’t go. I regret that to this
13 day. So they thought a lot of us.

14

15 Dethloff: Yeah, for that too. Could you comment in sort of general terms, on
16 relations with other Centers and with the Air Force for example?

17

18 Bruckner: Ah. . . the other Centers. . . We’ll talk a little more about that when I get to
19 ELV if you want to, but the other Centers that I was dealing with in those days were
20 Goddard and JPL, who are the main [centers for Earth and Space Sciences (Codes Y
21 and S). So those were the main ones and of course Marshall, was the design center for
22 Spacelab, so I had a lot of contacts with Marshall. I didn’t have a lot with JSC. [They
23 were] more the flight side. I was not in the flight side. They did have a payload

1 complement there, and they did a lot of the design and integration in the Shuttle and I
2 certainly had contacts there, but I didn't work that close with them personally.

3
4 Snaples: Do they develop kind of characters? Do you say, "We're working with
5 Goddard this time and that means we're probably going to have this kind of interaction
6 with them versus JPL?"

7
8 Bruckner: No, I would say all the project managers were different. And we knew
9 how to handle each one. They all had different personalities. You can't compare a
10 Frank Cepollina on Hubble [to anyone else].

11
12 {laughter}

13
14 Bruckner: I mean you really can't. He's a great guy, but you have to negotiate with
15 Cepollina on different terms than you would say, with somebody at JPL. JPL, you
16 know, you deal with them different than you do with Goddard. JoAnn and I used to
17 laugh that JPL thought they were a higher form of life. And we had to consider that

18
19 {laughter}

20
21 Bruckner: And I told them that. But you deal with them on different terms than you
22 would Goddard. Yeah.

1 Dethloff: I just finished doing a history of Voyager at JPL. It was a lot of fun.

2

3 Bruckner: Well now Voyager; wasn't Dr. Stone the. . . .

4

5 Dethloff: Yeah. . . .

6

7 Bruckner: Yeah. . . .

8

9 Dethloff: The project scientist and still is technically.

10

11 Bruckner: Yes. [He] came out for the Odyssey mission and that was his last mission
12 as director too. I think the world of Dr. Stone, [he is a good friend].

13

14 Dethloff: He was a neat guy.

15

16 Bruckner: He was one of the absolute best scientist and managers that NASA had
17 and very well liked at JPL. And he was very pleased that he's still one of the P.I.'s. He
18 was a P.I. as a director on one of our missions and I forget which one. I don't know,
19 they would know out there.

20

21 Dethloff: I don't know.

22

23 Bruckner: He was still, he reminded me. . .

1 Dethloff: Yeah, he's still active project scientist on Voyager.

2

3 Bruckner: Where were we?

4

5 Dethloff: Well, we were talking about. . .

6

7 Bruckner: Am I rambling too much?

8

9 Dethloff: No this is good. This is what we want to be talking about. Payloads and
10 relations and with other Centers and developing of payloads.

11

12 Bruckner: We had an interesting time with the Russians when we started Space
13 Station.

14

15 Dethloff: Good.

16

17 Bruckner: You know, we were the Phase II program, we were going to MIR. And
18 they needed a way to dock the Shuttle so the Russians built this thing called a docking
19 adapter. They brought that here to fly on the Shuttle. They showed up with a team of
20 Russians. One of the jobs I've had over the years is you know activating and using
21 facilities. We had to bring [the SSPF] on-line and some of the people that work for me
22 were responsible to get that checked out and working. Well, the first thing we

1 processed in Space Station was that docking adapter. So the Russians showed up and
2 that was a very, very interesting experience for me.

3
4 Snaples: Was it strange to have started out with the idea of beating the Russians to
5 the moon and then have them show up and now you're working . . .

6
7 Bruckner: It was very strange and same people that were sort of your colleagues(?)
8 over there, and it was very, I don't know if strange is the word, it was almost surreal. I
9 had some conversations with some of the Russians, they worked the military side and
10 the civilian side. It was all one. So the same people that were [probably] working on
11 ICBM's to wipe you out were working this [docking module]. But they were fun to be
12 with, you talked to them on a technical basis, you didn't normally get into the other parts
13 of that. It was just sort of there under the surface. We both knew it and we dealt with it.
14 But they were interesting to work with. And very sharp, knew their business. Made
15 good hardware.

16
17 Snaples: Were there any particular concerns about you not maybe saying too much
18 to them or were there things you had to be careful about that maybe you weren't as
19 careful about with other. . .

20
21 Bruckner: Oh yeah. I mean you know that's just part of our training that has been
22 ingrained in us since we were here on those aspects of the job and what you keep to
23 yourself. But it didn't cramp your style.

1 Dethloff: You worked together.

2

3 Bruckner: You worked together. You stuck to what you were doing and you knew

4 what to talk about. But honestly we don't have a lot of secrets. We just really don't. It

5 was probably more on their side than mine. I do remember one instance. We decided

6 to have a little party for them out at the Beach House. And the guy's name that was

7 their Project Manager on the module was Slava Gavrilov. We got to be pretty good

8 buddies. We were at the Beach House and we went out on the deck there and he

9 looked over at the Titan Pads and I started pointing [them] out and he said, "I know what

10 they are."

11

12 {laughter}

13

14 Bruckner: He knew exactly what those were and where they were.

15

16 Dethloff: That trawler had been sitting out there watching them come in.

17

18 Bruckner: I found that sort of amusing.

19

20 Dethloff: Interesting.

21

22 Bruckner: But they were fun and they liked to do their toasts too.

23

1 Snaples: Vodka?

2

3 Bruckner: Yeah Vodka. I found out though, off the record, that you could drink
4 water, they (didn't) know the difference. So you took one Vodka toast and then, you got
5 close to the sink [and] pour it out and put some water [back]. You didn't want to cause
6 an incident, but they thought we were drinking all of that Vodka.

7

8 Dethloff: Good trick.

9

10 Bruckner: But they do like to drink. I remember Gary Fooks, [from Security], one
11 time we were out there he came up after the party. He said, "Bobby are you OK?" I
12 said, "Gary I only had one shot. I've been drinking water all night." But I appreciated it.

13

14 Dethloff: It's like Tequila on the border. Watch it.

15

16 Bruckner: But yeah, we had a lot of fun there.

17

18 Snaples: And then you end up back in expendable launch vehicles?

19

20 Bruckner: Yeah. Let's see. Where were we? We were talking about the customers,
21 and various things about . . .

22

23 Dethloff: Yeah. And we got the Russians.

1 Bruckner: [We] had the Russians, Europeans, and so forth.

2

3 Dethloff: And they had the docking facility.

4

5 Bruckner: OK. We were in the throes of [checking out] Space Station [hardware].

6 [My bosse], John Conway, retired. I was the Second Line Director under John and Jay

7 Honeycutt was the Center Director. I don't remember if he called me, or what, or told

8 John to tell me that he expected me to take over. I didn't particularly want to because I

9 was very happy. I had a good job. Second Line Director is a great job. Because you're

10 sort of shielded from some of the other upper management. So I [became a first line

11 Director]. [Spacestation was] starting to build up [and] we had Spacelab [phasing

12 down]. Then I had to get the work force over to Space Station. You know we went to

13 locating the various programs [at the centers but] they never took ELV and made it a

14 program. They just sort of, like it's a small thing, and just sort of kept putting it off. But

15 they still wanted to consolidate those functions. They kept talking about Kennedy. That

16 had come and gone for years. People just sort of said, "Yeah. Yeah." And it would go

17 away again. Well they finally got serious and I was told, "Well you've got to do this to."

18 So then [a new Center Director] Roy [Bridges] shows up. On a couple of occasions I

19 told him that I believed that the ELV thing has to be worked and focused, and I really

20 [couldn't] do that [and] Station. He told me later he thought I was really kidding when I

21 told him that because . . . I guess you view yourself in all kinds of ways as you go up

22 into management, and I certainly had a very responsible job. I think Roy sort of looked

23 at this as a little bit of a step backward in a career. We talked about that quite a bit. I

1 didn't look at it that way. I always thought that you give a person a job to do and you go
2 do that to the best of your abilities. And I felt very strongly that if you want to make the
3 ELV Program successful you really [had] to go focus on that because when I looked at
4 it, it was very obvious to me that you had to start from scratch. The various functions
5 were scattered through Goddard, through Lewis or Glenn now, Lewis in those days, and
6 Kennedy. You still had this customer base out there, [who] of course we knew how to
7 deal with, [who] were building satellites. [The processes were not] very well
8 documented that I could find. If you're going to establish a Program it's very structured.
9 That structure wasn't there. Plus you were still launching. I mean if you look at the
10 manifest, they were thinking they could launch once a month or so, and this is a very
11 daunting job. So Roy agreed after about the third trip. Steve Francois was one of my
12 Directors over in Station, so we agreed to split that off and [Steve and I] sort of [split] the
13 work force. And at that point I also had to decide [how we could still closeout]
14 Spacelab. We [had] Space Station [launches] coming up, but I also knew we had [to
15 have a] work force to build [ELV]. So I had to make a decision. It was very difficult
16 because if you had worked Shuttle and Spacelab and you were asked to go work
17 unmanned, it was a big change.

18
19 Dethloff: Sure.

20
21 Bruckner: I guess maybe a little step down; some people would view it that way. So
22 I had to do some directed assignments. Those aren't fun. But I did that. And Steve
23 and I sat down and we sort of divided the work force and that's the way we did it.

1 Dethloff: So you split out of Space Station basically?

2

3 Bruckner: The Space Station, and then [with] some of the work force we established
4 a core of people for ELV. We were promised 30 civil servants from Goddard and 30
5 from Glenn. But the problem was, it was voluntary. So you know what happened? I'll
6 tell you one story about that when we were starting. I immediately got with Personnel
7 and we decided, well we better recruit if this was voluntary. We better go sell the merits
8 of Kennedy and convince people that the thing to do is pull up roots and get your family
9 and move to Florida. So I decided to go up to Cleveland, Ohio. And this was about just
10 as it thawed out. There was still snow on the side of the road. And I'm thinking, and I
11 told Jim Jennings, "This [will be] easy. We'll go up there and load up the bus. They'll
12 just want to come out of Cleveland." So I went up there and started recruiting. [I] had a
13 room there, they would come through and talk. They were nice people [but] at the end
14 of the day I didn't have any commitments. I mean this [was] amazing. But I found out
15 that family ties are very, very important and close in that part of the country. And I
16 wasn't doing a very good job of selling. So I got on the phone and called Jim Jennings,
17 I said, "You've got to give [them] the maximum [moving incentive], I'm just not doing well
18 here." We went through several iterations and got some very, very top notch people
19 from Glenn Research Center. And we got a few from Goddard. We didn't get a lot from
20 Goddard, but what we got were excellent. So we took that KSC core; and then what
21 have you got? Well, you've got three cultures. Lewis was working Atlas mainly. And
22 Goddard was doing Delta plus Pegasus and some of the other ones. Different cultures.
23 So here I had three cultures trying to meld into an organization.

1 Dethloff: That should be an interesting experience.

2

3 Bruckner: And then trying to keep everybody happy and establish a program and
4 document it. And you know we didn't have procedures. I mean we knew what to do.
5 We knew how to do it, and we were very successful. But we couldn't point to a well-
6 documented structure. So that was a real problem trying to get that done while
7 launching. And you had to have various agreements on who does what. You had to
8 have an Ops plan and on and on. So the last three years just about killed me if you
9 want to know the truth.

10

11 Dethloff: Yeah.

12

13 Bruckner: But looking back it's certainly a high point because I feel like, and I don't
14 want to sound egotistical, but I do feel like that is something I left the Center.

15

16 Dethloff: Yeah.

17

18 Bruckner: These other things I did, I had a lot of fun. It was all in teamwork. We did
19 some good things for the Center. The Center certainly has a great reputation with the
20 various customers that come here. They look at us as a positive. But I couldn't point to
21 that and say I was directly responsible and in charge of that. I was a part of it. But
22 establishing this program here and making it successful, I feel like that is something that
23 I've left for the Center.

1 Dethloff: Let me ask you almost a philosophical question, I guess, but in terms of
2 ELV and manned, piloted, operations, where is ELV now in the broad spectrum? I
3 mean you've been here. You've covered most of the history of NASA with your
4 experiences. And where is this fitting into the general scheme of things? You know
5 we've kind of gone full cycle in a way. From the early ELV to and now we're back there.

6
7 Bruckner: Yeah. Well that's a good question. I think a lot of the people probably
8 said you know why would anybody want to leave you know this glamorous manned
9 program and go work that? As I said before, I was hired at NASA to do a job and
10 whatever those jobs were I threw my efforts into it. I wouldn't belittle any of them and I
11 think some of the people on the Center got a kick out of it. But I knew [I had to be]
12 careful with ELV because it does have to fit in the [overall] scheme of things for NASA.
13 And it is certainly not on the top. It has its place.

14
15 Dethloff: OK. What is that? How would you define that?

16
17 Bruckner: Well its place is to put things into [outer] space [or] in low-earth orbit for
18 the earth sciences or the space scientists that economically doesn't make sense to put
19 on the Shuttle. It's a lot more economical. . .

20
21 Dethloff: It's a cost driven program?

22

1 Bruckner: Yeah. All right let's look at a project to go study the earth. Launch
2 costs—I mean if you are a Project Manager at Goddard you want launch costs down as
3 low as you can get it percentage-wise because it's all compromises when you're
4 building that satellite. Can I have this instrument? Or can I have this instrument? Or
5 can I have this much fuel and this is how long this thing is gonna last? Or can I have
6 this much fuel? So this is all a trade off and compromise. And it turns out that the
7 launch costs are certainly cheaper to go on unmanned because, it's obvious you don't
8 have all of the two-fault tolerant and redundancies, which is an interesting thing in itself
9 having worked a manned program and go to unmanned.

10
11 Dethloff: Yeah. You can see it.

12
13 Bruckner: Well in some cases it's harder. It's riskier because you do not have those
14 two-fault tolerant systems and all the various things you have for a manned program.
15 So you have to be a little more diligent. And that's not a well known thing. There were
16 some very fine engineers [available] and I was able to recruit some. I have the utmost
17 respect for [the Shuttle Program] to go through those systems and get comfortable to
18 launch. I have done both. I have sat on the console out at the LCC and given the go
19 on the payload side for Shuttle. Always had a good team. I always felt very confident
20 that when they told me we were ready to go that we were ready. But, I tell you, the first
21 time that I was in charge of an ELV launch my blood pressure was probably a little
22 higher because you have to realize that you don't have all of that . . .

1 Dethloff: Backup. . .

2

3 Bruckner: Backup and everything has to work or you're going in the water. And if
4 you go in the water you go explain this to Congress and I didn't really want to do that.

5

6 {laughter}

7

8 Dethloff: You never had to?

9

10 Bruckner: I never had to do that.

11

12 Dethloff: Well, good.

13

14 Bruckner: I was very blessed in that I had a 100% success record when I was the
15 head of ELV.

16

17 Dethloff: Is that right? That's incredible.

18

19 Bruckner: And I wish they continue that. But to try to answer your question, in the
20 scheme of things, it is driven by what that project needs to do and what is the most
21 efficient way to get them where that payload needs to be. Whether that be Shuttle or
22 unmanned and that's what has to drive that decision.

23

1 Dethloff: Are ELV and the Space Station going to mesh, you think?

2

3 Bruckner: I just don't know.

4

5 Dethloff: I wonder.

6

7 Malone: I know the Russians launch expendable(s) for logistics purposes.

8

9 Bruckner: There have been various studies to use an expendable for re-supplies.

10 And various companies came in and talked to us. But that is certainly a JSC and

11 Shuttle Program decision or Space Station Program decision. I know they're not going

12 to let anything that impacts Station that's not safe.

13

14 Dethloff: Yeah. That's the problem. That's right. Yeah.

15

16 Bruckner: Like I said, it's a very different philosophy and a very different world in

17 unmanned and manned. So how do they mix? I don't know. I think there's a pretty

18 wide gulf in between if you want to know the truth. I think they both have their place.

19 What we try to do is to make that as efficient as possible in the unmanned. To try to get

20 our customers to where they need to be at a reasonable cost.

21

1 Dethloff: But you think then you've basically given ELV an identity and a presence
2 that is going to be with NASA for a while now, which would not have been there
3 otherwise?
4

5 Bruckner: And that belongs to Kennedy Space Center. We own that program. It
6 belongs to us. And it is the only program we own. It's small. But it's, I think significant
7 in itself. And certainly has to take its place at the Center. And I think people were fairly
8 amused [when I would] sort of go overboard a little bit to sing the praises of [the ELV]
9 program [because I was afraid] it would get lost in the mix.
10

11 Dethloff: Sure.
12

13 Snaples: Sure.
14

15 Bruckner: And that's one reason I did it. I know I aggravated probably the boss at
16 times and others about that. But I was trying to look out for the work force and their
17 futures and where they fit in the scheme of things. Roy told me one time [when] he got
18 mad at me. This can be on the record I don't care. He said, "You have to understand
19 you're number 3 around here." He said, "We have to fly this Shuttle safely. We have to
20 build this Space Station. And you're number three." And he said, "Those first two will
21 get me fired in a hurry." I said, "No sir. The third one will get you fired because it's
22 yours." {laughter} So we went from there.
23

1 Snaples: Well, isn't the third though the only one that you're going to have to have
2 from here on out?

3
4 Bruckner: I think that it will be around. Sure. I mean the first thing we did, if you look
5 at the moon, we send unmanned probes. And that's what we're doing with Mars.
6 You're not going to be ready until you understand the planet and what you can do and
7 where you can land. What you're gonna find when you get there. You do that with
8 unmanned probes. And that's, I think, where we [are] if I were [to] draw a comparison
9 between that, the moon and Mars. So it has its place. They certainly [have a] very
10 robust manifest. I was talking to Steve Francois the other day and he was telling me
11 how many launches he had and it is very, very hard to pull that off. So I would say
12 they're doing something right.

13
14 Malone: I was going to ask you, when you first started out at NASA, and I've heard
15 different people talk about that they were more hands-on with the technical aspects and
16 then over the years how the Center's history has evolved to where the NASA folks are
17 over-seeing. Maybe you could talk a little about that.

18 Bruckner: Yeah. Well that was certainly more in evidence when we started the
19 Shuttle Program, and went to more of a mission kind of contract where the NASA
20 people were told to pull back. And certainly there were more opportunities maybe when
21 I came to work here to do the hands-on. Although [in] the Apollo Program there was
22 certainly money there if you wanted a contract. I mean there was money to go buy it. I
23 feel like that is an individual choice that employees make. It's not easy. Let me put it

1 another way. It's a lot easier to say, you know I get hired here, this is what we do, we
2 coordinate, we oversee, we do this that or the other. But if you really want to do it, and
3 that's what really lights your fire so to speak, even with a contractor I've found that you
4 can partner with them, you can team with them . . .

5

6 Dethloff: There are a lot of different contract relationships?

7

8 Bruckner: Absolutely. And if you are a contributor and you know what you're doing
9 they're not going to turn you away. So it's a little different in that it may be harder to do
10 and maybe a little different aspect. But I still believe to this day, and I always [told]
11 people that work for me, "If you want to do hands-on, it can be done. But you've got to
12 want to do it." If you don't want to do it, it's much easier not to and certainly I'm not
13 belittling that. We need to do both. But I would say the opportunities are not as great
14 just because of the way the Agency has chosen to go do business. But individually I
15 still believe an engineer can do as much of that as they want to if they want to come to
16 work here.

17

18 Dethloff: Sure.

19

20 Bruckner: And I recommend it.

21

1 Malone: What about some of the challenges, and we've kind of talked a lot about
2 the good parts, do you remember any specific technical issues that you all really
3 struggled with? And how you overcame that here at KSC?

4
5 Bruckner: Well I was not directly involved, but I certainly remember the tile situation
6 on the Shuttle and trying to get that working. We were behind in getting the LPS
7 system. So we were under a nice umbrella so to speak. [They] were not ready to
8 launch and we were sort of riding that out. But I certainly remember that as a technical
9 challenge that had to be solved, although I wasn't directly involved. I don't think we had
10 [any], other than the normal challenges in building checkout systems. Kennedy has
11 always been good at that. We may have lost a little bit of that. But our forte, and I think
12 we should have done a better job in the eighties of being recognized, we know how to
13 checkout flight hardware. We're good at it. We didn't have, that I can remember, any
14 insurmountable challenges there. But, hey this Center likes technical problems. I mean
15 . . .

16
17 Dethloff: Good statement. OK.

18
19 Bruckner: . . . engineers, I found, me included, relish working a technical problem
20 and running it to ground. And I think that culture is still here.

21
22 Dethloff: Good.

1 Malone: Were you involved in the CLCS System development at all?

2

3 Bruckner: No.

4

5 Malone: That's after you moved out of that area? That's the follow-on to the
6 system you worked on.

7

8 Bruckner: That 's the follow-on, but I've not been directly involved in that. I did
9 supply some talent that happened to be working for me for that project. And I think I
10 was on, yeah, I was on the board, what did we call that? What are we setting up now?

11

12 Malone: Like an SEB or something?

13

14 Bruckner: No. To oversee a project. Senior managers that we would review that
15 project. But that was the only direct involvement I had.

16

17 Malone: Do you have any memories about the public and their interest in the
18 program at all? Even in the community here throughout the early days to now?

19 Bruckner: Nothing stands out Lisa. My main dealings would have been on the
20 payload side and certainly they were always exciting. They would bring their families as
21 you know and we tried to treat them right. We got them a good place to view the
22 launch, and they always enjoyed coming to KSC. My observation would be that [KSC]
23 is sort of taken for granted in the local community. As to what the economic impact and

1 the people impact that the Center has had on this area. And there are a lot of reasons
2 for that. You know the economic thing has changed quite a bit, especially with Disney
3 coming to Orlando and changing it around. But I've always thought the community
4 should maybe toot their horn a little bit more than they do of what we have here.

5

6 Dethloff: Have you felt KSC is much more under the public eye than any other
7 Center than the rest of NASA?

8

9 Bruckner: Oh yeah. You go anywhere and you mention NASA, they're gonna think
10 KSC. I mean that's still here. That's certainly a part of our legacy and that's what
11 people remember. You know you always say hello Houston and all of that. And that's
12 fine but the people still, anywhere you go or talk to them, KSC is still their vision of
13 NASA. It's the smoke and fire.

14

15 Snaples: Any last comments you'd like to make? Anything you think we forgot to
16 ask you?

17

18 Bruckner: No. Other than I would say that in my career and in my life I feel like I am
19 very blessed to be able to work for NASA and have a career with NASA. I didn't regret
20 coming to work [here].

21

22 Dethloff: That's wonderful.

23

1 Bruckner: And I always had a good time. There were good and bad days, I have to
2 tell you. But this is just a dream come true. I enjoyed every day of it.

3
4 Snaples: Just one last on that topic. Were there times when you were working out
5 here when the engineers and the employees would kind of look at each other and say,
6 “Wow, this is incredible what we are doing here.” Was there that comprehension that
7 this was something marvelous and wonderful that nobody else really ever got to do?

8
9 Bruckner: At times. But I wouldn’t say that was very overt. We’ve always said this is
10 what we do.

11
12 Dethloff: This is the job.

13
14 Bruckner: And we’re the best at it. We knew that and kept that going. But I don’t
15 think there was anytime we would go back and have any revelation of how good we
16 were or what we were doing. I do know that you can get blasé about it. If you haven’t
17 worked in industry and seen the other side it’s very easy to get blasé about it. I don’t
18 remember who told me but it was either in some training or some people that came here
19 [who] were in industry. They would have these pep meetings. You know get pumped
20 up, like they do at Wal-Mart or Home Depot or some of those places. And the
21 observation was, they said, “You know that’s built in here. You don’t have to do that.
22 Every time you launch successfully that’s your pep rally.” And I think that we forget
23 about some of those aspects. We shouldn’t forget that. We are special.

1 Elaine Liston: You mentioned that the Apollo moon landing was the highlight of
2 your career.

3

4 Bruckner: Right.

5

6 Liston: Would you talk about maybe your most memorable moment working at
7 KSC?

8

9 Bruckner: There are a lot of them.

10

11 Liston: The top three.

12

13 {laughter}

14

15 Bruckner: The top three? Well certainly the moon landing is number one. Doing that
16 successfully and being a part of that. And I didn't consider myself a real big part
17 because you remember I'd only been at the Center three years when we successfully
18 landed on the moon. But I mean just working with [Apollo]. The Shuttle is nice. It's
19 really great when it launches. It's a sight to behold, but it can't hold a candle to that
20 Saturn V. When I first showed up on the Center and saw that monster, I mean that just
21 would put chills down your spine. And we had one night launch that I snuck out of the
22 firing room and saw. That's certainly a highlight. The first Shuttle launch is [also] a
23 highlight. Doing that successfully and getting Crippen and John Young back. Getting

1 the Shuttle back and landing is certainly a highlight. And let's see, the third one, I would
2 say, this may not be what you're looking for, but a highlight of my time is the people
3 here at Kennedy and the part that I've had of trying to develop the people. The
4 opportunity I had as a senior manager to develop people. And I mean if you're gonna
5 leave anything, any kind of legacy, which very few of us will. And I certainly [wasn't] as
6 one of the movers and shakers of NASA, but the legacy you leave if you're a good
7 supervisor are the people you leave behind to carry on the work. And I've been very
8 lucky to have some very, very fine, smart [employees]. I always try to surround myself
9 with smart people because they cover up my inadequacies. That's certainly a highlight
10 to be able to be a part of that and have some very fine and smart people to carry on the
11 work.

12

13 Liston: Thank you.

14

15 Dethloff: Thank you very much.

16

17 Bruckner: OK.

18

19 Dethloff: We really appreciate it. Good interview. Good comments.

20

21 Snaples: Good interview.

22

23